ERIC Document Resume	See Instruction Sheet	DATE OF RESUME	DATE RECEIVED

A. PUBLICATION DATA

1. ERIC NUMBER	2. ORIGINATOR CONTROL NO(S).	3. IDENTIFICATION NO.
ED002470	N.A.	N.A.

DO NOT WRITE IN SPACE BELOW

4. AUTHOR(S): Brown, B. Frank

5. TITLE OF DOCUMENT ABSTRACTED: An Answer to Dropouts: The Nongraded High School

6. PUBLICATION TITLE: Atlantic Monthly

MICROFILM COPY AVAILABLE YES ☒ NO ☐

COPYRIGHT GRANTED YES ☒ NO ☐

COPYRIGHT RELEASE FILED YES ☒ NO ☐

TYPE OF REPORT
PROPOSAL ☐
IN-PROGRESS ☐
FINAL ☒
FOLLOW-UP ☐

7. EDITOR(S): N.A.

8. PLACE OF ORIGIN: ORG. Atlantic Monthly Company, ST. Boston 16, Mass.
CITY, STATE
TELE. EXT.
INST/LOC CODE

9. PUBLISHER OR SOURCE: Melbourne High School, Melbourne, Florida

OTHER ERIC REFERENCES:

ERIC SATELLITE CODE

10. VOL.	11. PAGES	12. MO./YR.	13. TOTAL PP.
NA	86-90	11/64	5

B. INDEXING DATA

14. SUBJECT AREA

15. TYPE OF ENDEAVOR: Report

16. INDEXING TERMS (6-12)

nongraded system	achievement	independent study	laboratories	
secondary education		remedial education	responsibilities	
students	faculty	teachers	talent	
			libraries	

17. ABSTRACT (MAX. 250 WORDS)

Discribed is the reorganization of a Florida high school from a graded to a nongraded phased curriculum developed around students' achievement levels, rather than their chronological ages. Classroom work accompanying various achievement phases is described. Remedial work is emphasized in the first phase, basic skills in the second, average levels of course content in the third, the same material in the fourth but with coverage quality reaching a deeper level, and college level courses in the fifth, with students assuming complete responsibility for their educations. An additional phase allows capable and interested students to do independent study and research in areas of special interest under the guidance of a faculty member. Philosophy underlying the phased curriculum provides for student learning according to individual capabilities, with abilities considered separately in relation to each subject. Students advance to a higher phase only when they are willing and ready.

The effect of phasing on different areas of the curriculum is discussed. Training in reading is considered as much a high school as an elementary school concern. In the phased curriculum, intensive remedial work in daily reading laboratories increases proficiency. Students with poor mathematical backgrounds are scheduled for increased time in small classes.

The new role of the teacher in the nongraded organization is explained. Teacher presentation of materials occupies only twenty percent of class time, with the remainder divided between small group discussions and individual projects sparked by teacher questions and suggestions.

ERIC No.

18. SOURCE OF ABSTRACT

C. FUNDING DATA

19. SUPPORTING ORGANIZATION	20. DIVISION OR DEPT.	21. CONTRACT NO. / PROJECT NO.
	22. TOTAL COST OF PROJECT	
	23. DURATION OF PROJECT	U.S. Department of Health, Education, and Welfare Office of Education

ERIC Form 1

NYSED

ED002470

AN ANSWER TO DROPOUTS

The Nongraded High School

BY B. FRANK BROWN

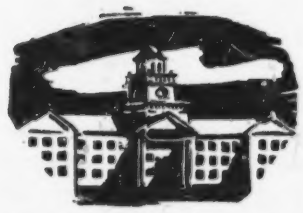
U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education

This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

(*Reprinted from the Atlantic Monthly, November 1964*)

JO730

ED002470



An Answer to Dropouts

The Nongraded High School

by B. FRANK BROWN

The following article by B. FRANK BROWN, *principal of Melbourne High School in Florida, is the second of the* ATLANTIC'S *series on the public high schools. Mr. Brown serves on the Panel for Research and Education of the President's Science Advisory Committee, on the Advanced Placement Committee of the College Entrance Examination Board, and on the Educational Advisory Committee of the Aerospace Foundation.*

IN THE not too distant past, the only path for a school to follow was the well-worn and repeatedly traveled road of conventional education. The idea of a school going any other route was inconceivable heresy. The change at Melbourne High School actually preceded the technological revolution by several years. Our program of experimentation was launched in 1957, shortly after the Russians slammed the first man-made hardware into orbit around the earth. An important side effect of the Russian breakthrough was the creation of a national climate conducive to educational innovation and change in America. To a school operating in the shadow of what was then Cape Canaveral the launching of Sputnik was most provocative indeed.

Melbourne High School is a fifteen-hundred-pupil senior high school located in the Cape Kennedy complex. The proximity to the Cape gives rise to the myth that the students are all sons and daughters of space scientists. While there is a modicum of scientific personnel in the area, the vast majority of students are the children of technicians and laborers. What most of America does not realize is that the creative genius behind the missile industry is concentrated at missile design and space centers in California and Huntsville, Alabama. The chief function of the John F. Kennedy Missile Test Center is to provide a firing range where the efficiency of missiles can be tested.

While the impact of Cape activity on the school has been conspicuous, its contribution is far more apparent in the quantity than in the quality of students. The school has been literally clobbered by the explosion in population created by the teeming influx of Cape workers. Each of the past five years has brought four hundred new students. Twice the school has been split to form new high schools in order to accommodate the deluge of incoming students.

While the enterprise at the Cape has brought an agglomeration of people to the area, it has also succeeded in bringing about a compensating community coalescence. The unifying element is the extensive support for space activities which has been generated in the area. This bond of like-mindedness has led indirectly to a profound community appreciation for the value of a good education.

Within less than a month after the first hole had been punched in space, the faculty at Melbourne High School had begun to debate the question whether we dare attempt to make advances in education comparable with the achievements in space. When a school develops heretical notions, the first obstacle which must be surmounted is the

Copyright © 1964, The Atlantic Monthly Company, Boston 16, Mass. All rights reserved.

problem of how to bypass the trip wires that keep schools conventional. Our move to overcome this barrier was to develop a strategy for change. The mechanics of this maneuver were based upon a process which we have since dubbed the "spin out," a technique whereby, instead of replacing an old practice with a new one, a new practice is introduced alongside the old. The cataclysm of the new tends to obscure or "spin out" the older course of action. This operation comprises a kind of innovative test boring. Its effect is to give the entire school program an innovative tug.

Since the immediate impetus of Sputnik kindled a national concern for the education of the gifted, our first "spin out" was designed to break the grade lockstep which has for so long restrained bright students. We simply removed all grade barriers and let the school's talented students pursue any course that they were capable of passing without reference to the grade to which they had been promoted.

The outcome exceeded all expectations. Increasing numbers of students eloquently met the challenge, and their parents were enormously pleased. Community approbation was so swift and convincing that in an unbelievably short time the whole process of grouping students into grades had "spun out" of existence. Once the stumbling block of the grade had been removed, we were able to concentrate in earnest on the development of a new brand of education.

What we were after was to reorganize learning on a radically different basis from the conventional plan which classifies youngsters into grades largely on the basis of age. The idea of grouping students by age into grades has never been more than a poor piece of technology. For this reason the most urgent problem facing education has for a long time been the issue of how to gear the curriculum to what the students actually know rather than to the grade to which they have been promoted. Only after this is accomplished can youngsters be taught to learn for the right reasons — for devotion to learning rather than for marks and promotion.

The new anxiety which Sputnik generated gave us a blank check to realign the curriculum in a manner best suited to the needs of students. Using the task-force approach, we probed a number of possibilities. We concluded that what was needed was a reorganization of the school around the knowledge and past accomplishments of the students. Subsequently, every student was rescheduled according to the degree of his past learning as measured by nationally standardized achievement tests.

We named this revolutionary new organization a "phased" rather than a "graded" curriculum. The word "phase" was carefully chosen since it fit our intent to make all learning situations temporary and to allow students to move up the ladder of learning continuously without being restricted by the limitations of the grade.

In the plan for phased learning, the curriculum of each student is linked to his personal achievement rather than to his chronological age, as is customary in the graded school. The notion of phasing deposes and refutes both the graded organization and the concept of annual promotion. The purpose is to replace stops and starts with continuous learning and constant advance.

The class situations created by the new phased structure for learning are as follows:

Phase 1. Subjects are provided for students who perform from 0 to the 20th percentile on nationally standardized achievement tests, indicating that they need special assistance in small classes.

Phase 2. Subjects are organized for students who range between the 20th and 40th percentile in achievement and who need more emphasis on fundamentals.

Phase 3. Courses are arranged for students who score between the 40th and 60th percentile on standardized achievement tests, indicating that they have an average background of accomplishment.

Phase 4. Subject matter is planned for extremely well prepared students who achieve between the 60th and 80th percentiles and who desire education in depth.

Phase 5. Courses are available for students who attain above the 80th percentile and who are willing to assume responsibility for their own learning, pursuing college-level courses while still in high school.

Phase Q. Students whose creative talents are well developed should give consideration to the Quest phase of the curriculum. This is an important dimension of the phased organization in that it gives thrust in the direction of individual fulfillment. In the Q phase, a student may register for independent study in any area in which he is deeply and sincerely interested.

The underlying philosophy of the phased curriculum calls for student learning to be deliberately variegated in accordance with the response of the individual. For example, a particular student may be programmed into Phase 1 for social studies (achievement below the 20th percentile), Phase 2 for language arts (achievement between the 20th and 40th percentiles), Phase 3 for science (achievement between the 40th and 60th percentiles), and Phase 4 for mathematics (achievement between the 60th and 80th percentiles).

Professor Jerome Bruner, director of the Center

for Cognitive Studies at Harvard, reports his impressions of the program in his forthcoming book, *Education for the Space Age.*

> In the multiphased school, courses have been reorganized into a system of phases that reflect not the grade in which they are taught but the student's ability to grasp the subject and his willingness to throw his weight into the task. Phase 1 is the remedial section and it is designed for students who need special assistance in small classes. When a student feels ready to try something more advanced, he is encouraged to set forth to the next "phase." His willingness is a major criterion. Phase 2 is for students who need more emphasis on the basic skills of a subject. Phase 3 is for those who are ready to have a go at the major substance of the curriculum in the field. Phase 4 is the subject in depth and with concentration. Phase 5 is independent study for the exceptional student willing to assume responsibility for his own learning and ready to use all available resources in doing so. He is supervised by a teacher with whom (as in any tutorial system) the student makes an appointment when he has finished a stint of work. The phase system operates in the four basic intellectual disciplines: mathematics, science, English, and history. They are the core of the process.
>
> Virtually every one of the major curriculum efforts of the last decade has been incorporated and fitted to the needs of Melbourne's multiphased school — the Physical Science Study Committee course, the Chemical Bond course, the Biological Sciences Curriculum Study, several experimental mathematics programs, and some homegrown innovations in social studies and humanities. These courses can and are being adapted to different phase levels. There is no reason why the new curricula cannot be adapted to this broader use more generally.
>
> But the realignment of students on the basis of achievement changes course content in the nongraded school in subtle ways. The school perforce resorts to a much wider range of materials than those used in the graded school. Standard textbooks aimed at a grade level are inappropriate and have been abolished. A multiplicity of materials has replaced the rigid text.

Professor Bruner's statement that the school teaches the new subject matter at different phase levels is worthy of further comment. It is to the nation's discredit that every one of the new curriculum projects sponsored by the National Science Foundation has been designed for the above-average student. Since no new curriculum has been devised to appeal to the lower group of America's students, our own teaching staff has taken on the task of adapting subject matter, designed for the gifted, to the various levels of ability with which the school must cope. The approach has been to tease out the major principles from the new material and to focus on the big themes which tie the subject together. When great emphasis is placed on the large ideas, the basic skills and principles become more interesting.

In effect, fundamental knowledge has been retooled around important new concepts, and these considerations are presented at multiple phase levels through the discovery method. When a youngster discovers a new concept by himself, it whets his curiosity and makes it easier for him to make a discovery the next time. Subject matter learned in this fashion is more realistic and meaningful to students.

A certain amount of anarchy has been deliberately introduced into the curriculum. This agitation-of-learning situation makes it possible for learning to be approached in violently different ways. Subject matter for some students is no more complex than the mastery of basic skills; for others subject matter becomes so intensively a problem-solving process that it acquires the sophistication of a Rorschach test. The ancient shibboleth that all students are equal and should study the same phenomena and learn the same details has been thoroughly dissipated. The intent of a nongraded brand of education is to provide a curriculum with differing clefs and keys. We are convinced that the only way to organize a school is on the basis of student achievement.

While in the past one of our major problems has been how to persuade talented teachers to work with the less talented students, the effect of a multiphased curriculum on this problem has been striking. As learning became more variegated and individualized we found teachers stepping forward to say, Give me the ungifted, for I am a professional and I can teach students of varying ability.

The forward projection of education can only be in the direction of a nongraded model. There is simply no other place to go. The major function of nongraded education is to give students a litheness of attitude and a suppleness of mind. Prognosticators forecast that the rapidly changing technology will require that students now in school be retrained three times. The intent of our curriculum is to equip students with "built-in" second-chance mechanisms. In the age of automation, each individual must possess a kind of expertise which will enable him to shift quickly when new skills are developed and old skills become outmoded. Such an environment demands a ground swell in the direction of flexible education. Because we operate in the Cape Kennedy area, we are convinced that an important function of the school is to develop individuals who are adaptable. Unless we succeed, our society will be too rigid to deal with the future.

ANY discussion of changes in the curriculum must eventually come to the point of what is being done about reading. This is the central intellectual obligation of the educated person and the most im-

portant subject in the curriculum, yet educators are unable to agree upon how it should be taught. While we in Melbourne do not claim to have all the answers to the reading debacle, we are deeply committed to the notion that reading is a high school problem. The high schools of the country are literally overrun with students who are unable to read above the third- or fourth-grade level. Training in this subject should not be relegated solely to the elementary school. It is a matter of extreme urgency for high school students with reading handicaps to receive particular attention. When students are phased instead of graded, those who do not read competently are scheduled for two or more hours a day in a reading laboratory. Here an intensive effort is made to increase reading efficiency.

Second in importance among the needs of high school students is a thorough understanding of the principles of mathematics. In the phased curriculum, students with a poor background in mathematics are scheduled for increased time in this subject. This extra time is provided in small classes where students receive as much personal attention as is needed in order to learn the subject effectively.

The phased curriculum, bracketed by a nongraded organization, denotes a big push in a new direction for the educational enterprise. But much more is needed. We found that the role of the teacher must also change to meet the dynamics of a changed establishment. The need for a new breed of teacher is as urgent as the need for a revolutionized curriculum.

Our teachers have been compelled to abandon the mass of trivia which directs the way conventional classes are taught. I am referring to the monotonous practice whereby the teacher conducts a class by asking questions to which he has pat answers. Over the years this technique has become so thoroughly ingrained as a method of pedagogy in the public schools that the publishers of many school materials prepare canned questions for teachers to ask. These trite questions are supplied in teacher manuals accompanying textbooks. It is a prescriptive kind of learning, which we found to be too ineffective to be useful in the classroom of a school with a phased curriculum.

Another major stumbling block to learning which we had to overcome was the extreme and exaggerated overuse of the lecture as a style of teaching. The lecture as a teaching technique was introduced into the secondary schools in the nineteenth century at a time when the public schools were educating only the intellectually elite. Its effectiveness has receded as a result of compulsory education laws, which have brought into the schools the general population with their exceedingly wide range of abilities.

Lectures are unprofitable in dealing with the mass population unless they are delivered in very small quantities. As a matter of fact, this method of teaching would have vanished a decade ago had it not been for the shot in the arm given by the team-teaching fad.

The lecture as a manner of presentation is far more appropriate to the setting of the college, where students usually have no more than two or three classes a day. High school students must face from five to eight classes a day. There is a decided limit to the amount of learning which can be absorbed through the process of being "talked to." Furthermore, many high school teachers are dull and uninteresting, while colleges attract the best and the most creative minds in the teaching field.

Another factor making the lecture more appropriate to college learning is the makeup of the college population, which is highly selective. The epitome of the matter is that the students in colleges differ vastly, both in intellect and sophistication, from the general population which comes within the province of the high school, where only a third of the students are going to college and where another one third of the students often are handicapped by cultural disadvantages. Since high school learning activities must deal with the general population, we found it expedient to organize instruction around shirt-sleeve types of activities in which students are personally involved.

While it is extremely important to allow the individual teacher flexibility of method in attaining the goals of the course, there are several basic principles which buttress viable learning in the classroom of the phased program.

1. Teacher presentation of materials generally may not occupy more than 20 percent of the time in the course. (This includes time spent in viewing films as well as lecturing.)
2. Discussion in analysis groups constitutes approximately 40 percent of the class time.
3. Individual work and reading encompass roughly 40 percent of the class time.

Now what can we say about the differences which these changes have wrought?

The most reassuring result has been the complete disappearance of discipline problems. The act of placing students in learning situations closely linked to their achievement has resulted in a remarkable improvement in their attitudes and behavior. Certainly the reading laboratory, where many students spend several hours of the day receiving personal attention, has made a tremendous difference to the youngsters in the low socioeconomic bracket.

At the other end of the spectrum, the achievement of the more able students has been spectacular. Such subjects as Greek and differential equa-

tions have been added to a curriculum which has become rich in variety. In each of the last five years the school has won first-place honors in the Florida State Science Fair. In national competition, students have twice won the Westinghouse Talent Search. Last year we produced a Presidential Scholar. The number of students enrolling in college has jumped from 30 to 70 percent. There is an ever increasing flow of able students to the high-prestige colleges. Alumni are presently enrolled at Harvard, Yale, Princeton, Amherst, and Smith. Reports from colleges reveal that most of the school's graduates are making creditable college records.

In addition to the intellectual changes which have taken place among the students since the establishment of the nongraded pattern, there are several important plant changes which are worthy of note. With students taking more responsibility for their own learning, we found that the conventional high school library was no longer appropriate. It became necessary for us to construct a new library which, in the words of the faculty, had to be "as large as the gymnasium." This new facility was built deliberately on the lawn of the school. The purpose was to make it available to students in the afternoon and evening after the school is closed. We have also found it necessary to construct new science laboratories in such a way that they could be made accessible after school and in the evening. When we took the limits off learning, many students began to ask for longer school hours. The school under the nongraded program has indeed undergone some revolutionary changes.

In conclusion, I feel compelled to mention one distinct drawback to a serious commitment to the notion of innovation and change. When a school ventures to undertake new programs, it can expect to be ostracized from its neighbors. Most schools are so tethered by the fetters of convention that they "would rather fight than switch." Through its adherence to a concept of heresy, Melbourne High School has indeed suffered the loneliness of the long-distance runner.